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8/25/02 ^{Surfa}

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Reply to Office Action Summary

background of the invention

subc3
G1

between paragraphs 0001 and 0002. There exists a static induction type semiconductor device which use as a power transistor. It is of the surface gate type and is used for providing a high current density. The static induction type semiconductor device provides a plurality of small source regions surrounded by a gate region. According to this structure the channel region beneath the source region becomes small, thereby increasing the stored carrier density and enabling a large main current to flow when using a small gate current, thereby achieving a high current amplification ratio. A thin insulating film provided on the surface of the n+-source region operates as a tunnel-oxidized film, thereby enabling electrons to be injected into the source region but preventing the positive holes from being drawn out. Therefore, as the consumption of positive holes stored in the channel region decreases, a sufficiently large source current is allowed to flow even if a further smaller gate current is injected, thereby further increasing the current amplification factor[1]. The drawback of the transistor are that it cannot operates on circuits of alternating voltage and current density is insufficient.

summary of the invention

G2 sub B2

"paragraph 0004" The advantage of the offered transistor is that it can operate in alternating-voltage circuit (220) 120 V and over (as a rule to 1÷2 kV), which means that it can be both closed and open with any voltage polarity and have high technical characteristics: a high current density and a high switch power. Besides, thick channel connected to a separate electrode provides simplifying of control circuit.

G3 sub C3

"paragraph 0005" This result is achieved by disposing elements of (the) a bipolar static induction transistor: a gate, a source and a channel -- as well as electrodes (and isolation) on each of (the) sides of a lightly doped substrate.

"paragraph 0006" is canceled.

G4 sub B3

"paragraph 0007" This result is achieved by disposing an epitaxial layer with the impurity concentration about 10.sup.17 cm.sup.-3 on each of (the) sides of (the) said lightly doped substrate of the same type of conductivity (with the impurity concentration about 10.sup.17 cm.sup.-3) with the impurity concentration about 10.sup.14 cm.sup.-3, in which elements of (the bipolar static induction) said transistor: (a) said gate, (a) said source and (a) said channel -- as well as electrodes and isolation are disposed.